

(No Model.)

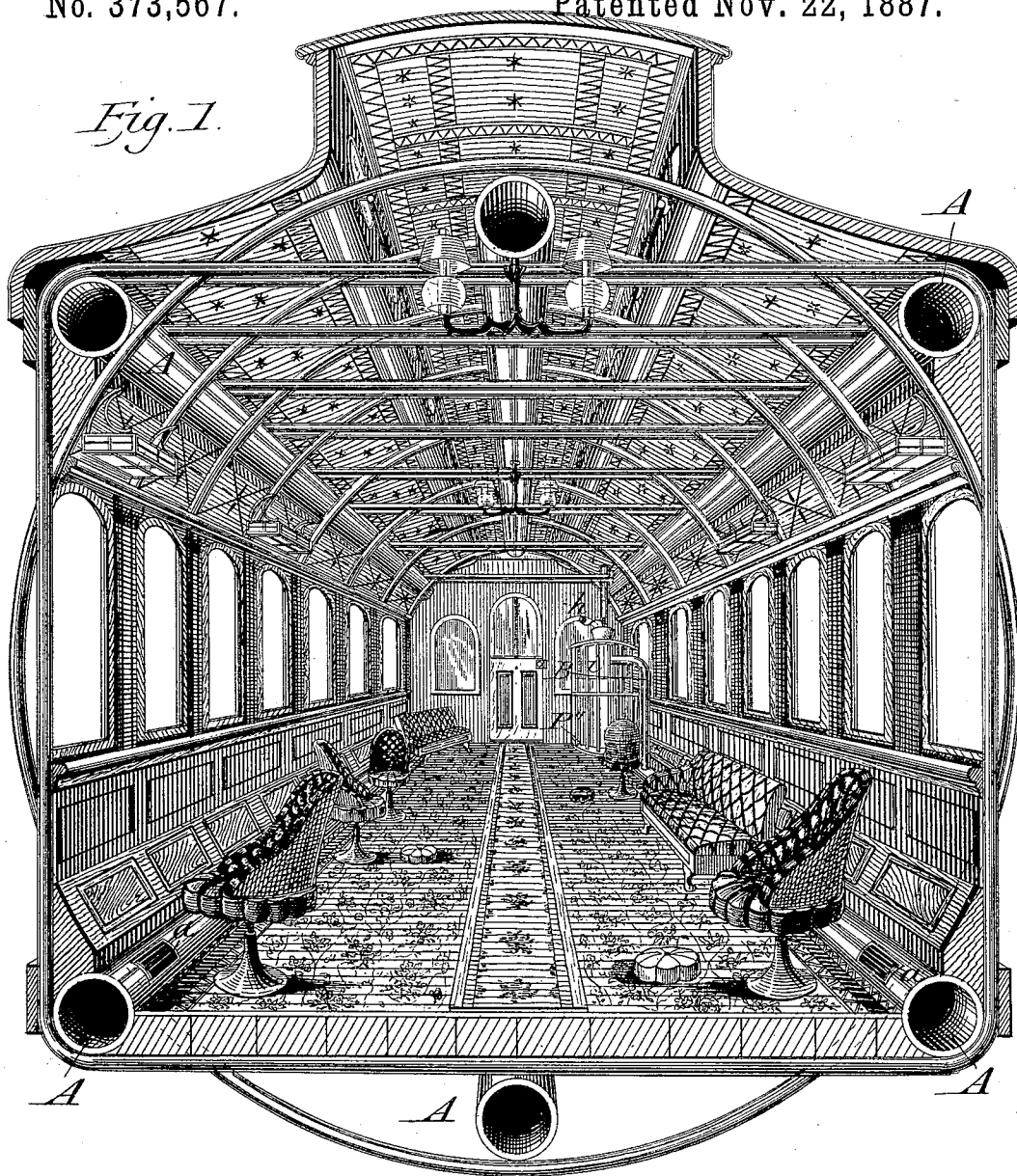
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J. W. POST.
CAR HEATING APPLIANCE.

No. 373,567.

Patented Nov. 22, 1887.

Fig. 1.



Witnesses

H. H. Schott
M. E. Chandler

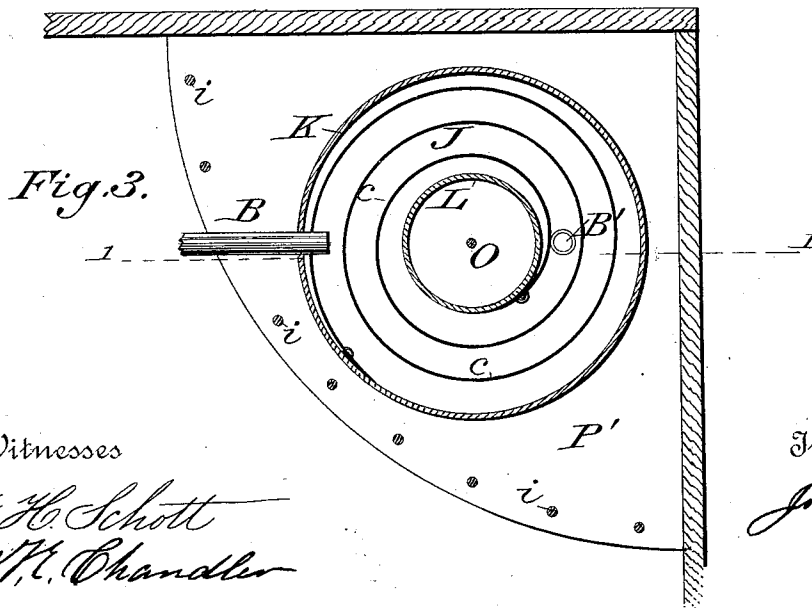
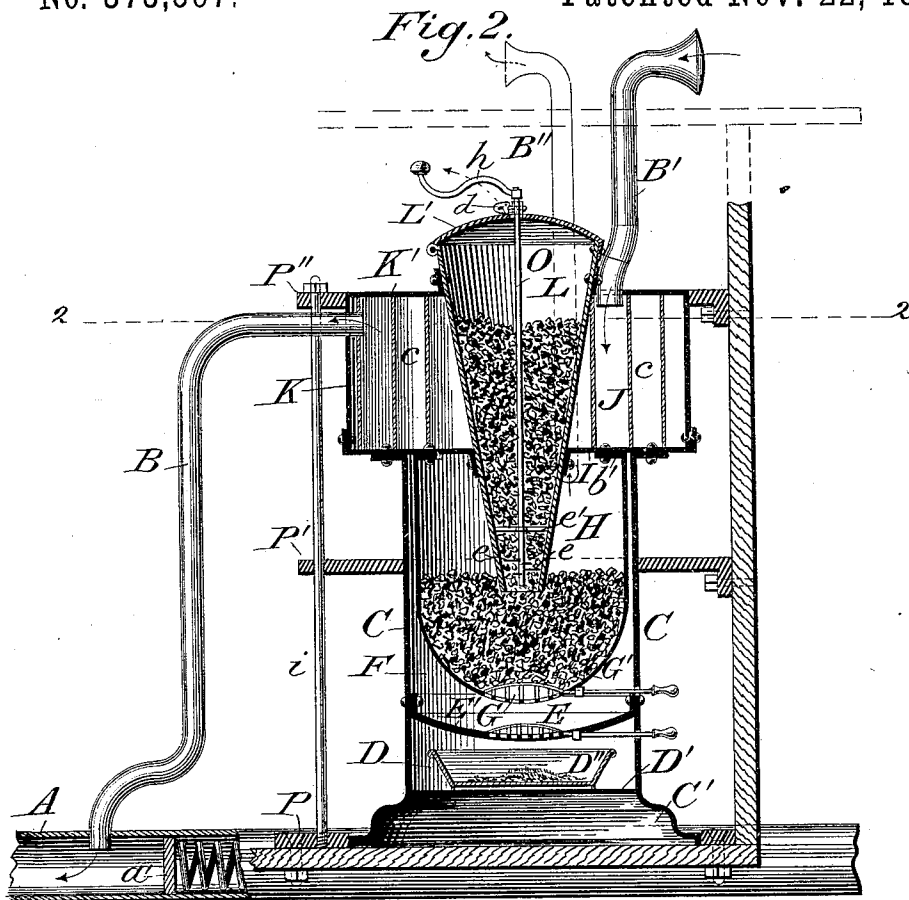
Inventor

John W. Post

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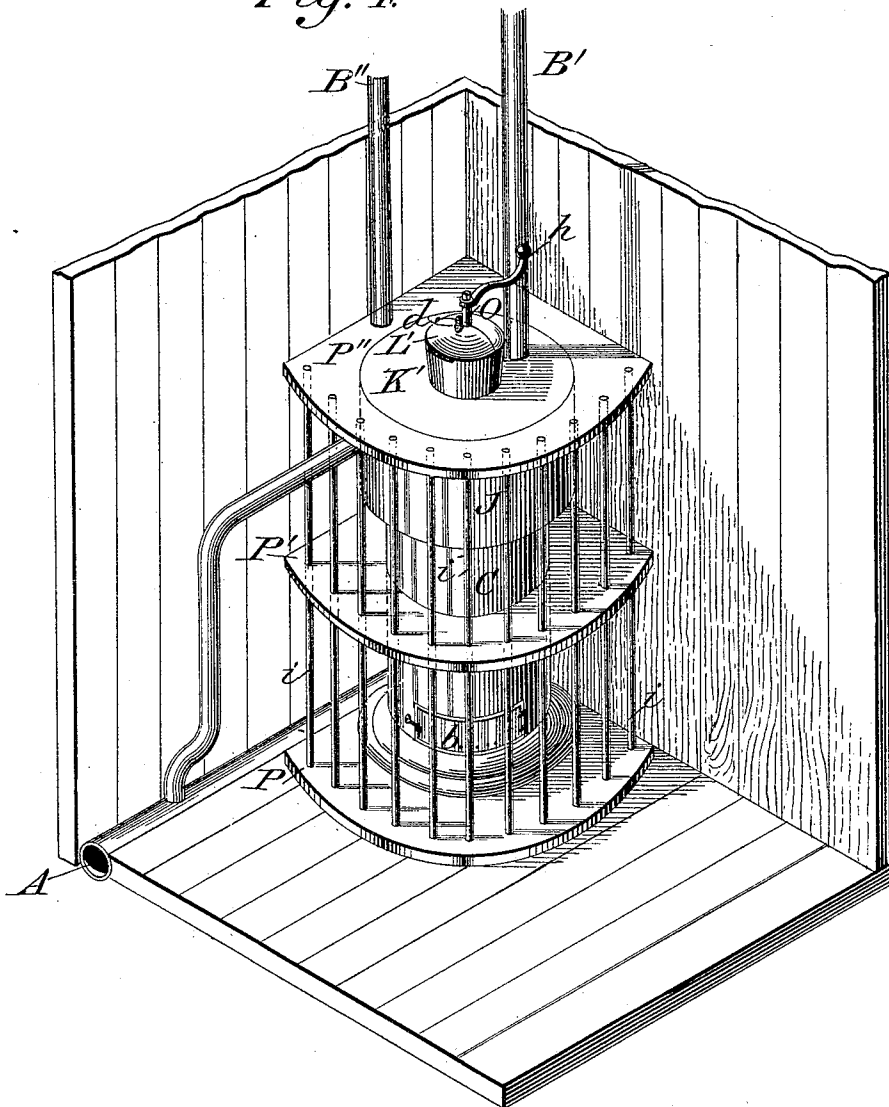
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Fig. 4.



Witnesses

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Fig. 5.

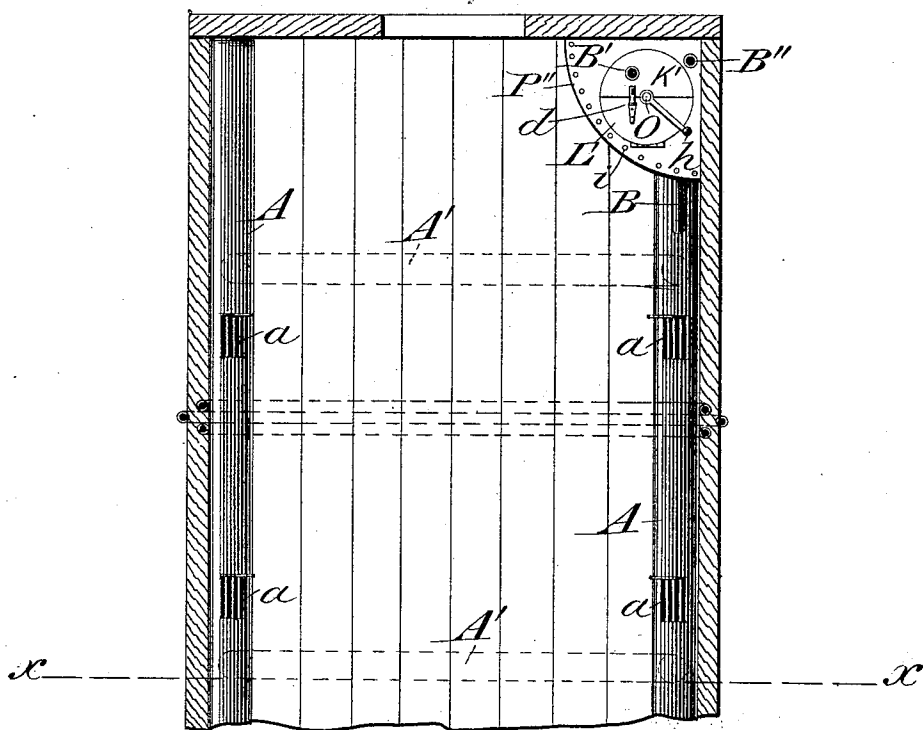


Fig. 6.

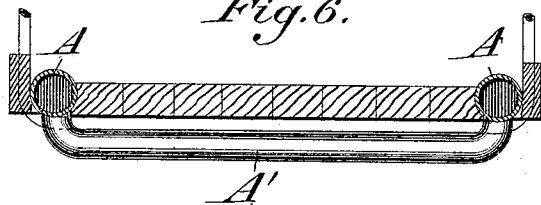
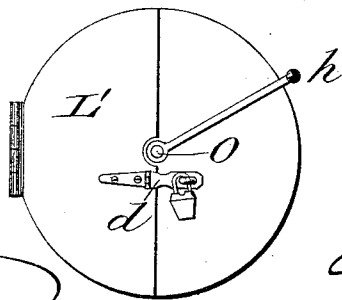


Fig. 7.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN W. POST, OF NEW YORK, N. Y.

CAR-HEATING APPLIANCE.

SPECIFICATION forming part of Letters Patent No. 373,567, dated November 22, 1887.

Application filed November 24, 1886. Serial No. 219,804. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. POST, a citizen of the United States, residing at the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Car-Heating Appliances; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in railway - car - heating appliances. These appliances as heretofore constructed have generally been found deficient in point of safety, and when safety has been secured by the employment of steam generated by the locomotive or a chemical stove, as in some foreign cars, the result has not been satisfactory, as it has been found practically impossible to maintain an ordinary passenger-car at a comfortable degree of heat in severe weather by such means.

The object of the present invention is to provide each car with a heating apparatus that shall not only be perfectly safe from accidents to the car, but shall be capable of giving out so much heat as to make the car comfortable even in the coldest weather and with the frequent opening of doors at stations called for on lines passing through a thickly-settled country or in the vicinity of large cities.

I prefer to apply this improved heater to a car constructed with a tubular frame, as shown in my Patent No. 285,675, utilizing the longitudinal tubes which take the place of the sills in an ordinary car as ducts for the passage of the hot air or steam employed; but it may be applied to cars of other styles of construction by introducing suitable tubes to convey the heating agent from the heater to such parts of the car as it may be needed.

In constructing this heater I employ the principle of what is known as the "magazine stove." The supply of fuel to last for a length of time equal to the ordinary run of the car being introduced before starting, the magazine being of sufficient capacity to hold fuel

for twenty-four hours, or more, if desired, the covering of the opening to the magazine for the introduction of fuel may then be locked, as it need not be opened during the run, the descent of the fuel to the grate being facilitated, if found necessary, by the rotation of a cranked shaft, the lower end of which near the opening of the magazine to the grate being provided with projecting arms which, upon the rotation of the shaft, stir up the fuel at that point and cause it to fall into the combustion-chamber above the grate. The lower part of this combustion-chamber is hemispherical in form, with the grate for the support of the fuel and admission of air thereto placed at its lowest point directly beneath the magazine. This grate, which is slightly curved upward to enable it the better to sustain its load when heated, has its bars placed at a considerable distance from each other to allow the ready passage of clinkers, and has below it a supplementary grate with small openings to allow of the passage of ashes into the ash-pit below. This supplementary grate is carried in a diaphragm which is securely attached to the outer shell of the heater, and forms a perfect safeguard against the passage of live coals or other ignited matter that might fire the car by escaping should the heater be accidentally dislodged from its position. To further guard against accident the shell of the heater is formed of tough iron or steel plates firmly riveted together, and the whole heater inclosed within a metallic cage, which prevents it from being thrown into the body of the car should it be broken away from its fastenings, or danger to the clothing of passengers by coming in contact with the sides of said heater, as will sometimes accidentally occur.

The invention may be said to consist in the construction and arrangement of the several parts of the apparatus, as will be hereinafter fully described, and then specifically stated in the claims.

In the accompanying drawings, which illustrate my invention, similar letters of reference indicate like parts in the different figures.

Figure 1 is an interior view of a parlor-car provided with my improved heating appliances. Fig. 2 is a vertical section of the heater and a portion of the car on line 1 1 of

Fig. 3. Fig. 3 is a horizontal section on the line 2 2 of Fig. 2, and Fig. 4 is a perspective view of one corner of a car with the heater placed therein. Fig. 5 is a plan view of part of car-floor, showing the arrangement of my improved heating apparatus. Fig. 6 is a transverse cross-section on line *xx* of Fig. 5. Fig. 7 is a detail view, on an enlarged scale, of the fuel-magazine and its locking-cover.

For the purpose of illustration the heating appliances will be described as applied to a parlor-car having a tubular frame constructed in accordance with the requirements of my above-named patent, A A representing the longitudinal tubes of the car-frame, which serve as sills, said tubes being provided with openings *a a*, controlled by registers and arranged in such a manner that the heat may be distributed equally throughout the car, or in greater amount at some points than others, if desired. These tubes A, which also receive the buffing-springs at each end, are provided with air or steam tight heads *a' a'*, placed just within said spring-supports, to prevent the hot air or other heating agent from coming in contact with said springs. A pipe, B, connects the tubes A A with the heater, the upper end of said pipe connecting with the upper part of the heater and its lower end with one of the tubes, the connections between the two tubes being made by a cross-pipe, A', placed beneath the car-floor and shown in Fig. 6 of the drawings.

The construction of the heater is as follows: An outer cylindrical shell, C, preferably of wrought-iron, is provided with an enlarged base which incloses an air-space, C', beneath the ash-pit D, so as to prevent the heat from reaching the car-floor. The bottom of this ash-pit is formed by a metallic partition, D', which partition has no opening through it, and therefore seals the bottom of the heater, perfectly preventing any escape of heated material that might endanger the car in a downward direction. An ash-pan, D'', may be provided for this ash-pit to facilitate the removal of ashes that drop through the grate E', admission being obtained through the door *b*, which also contains the draft-openings through which air passes to support combustion.

A downwardly-curved diaphragm, E, divides the ash-pit from the air-chamber F, the only opening in said diaphragm being circular and occupied by the grate E', the bars of which are close together, so as to permit only the ashes and finer cinders to pass through. It is also made to dump by rotation in the ordinary manner, so that the clinkers and other coarse materials which pass through the fire-grate G may be removed through the ash-pit door. This fire-grate G is at the bottom of the combustion-chamber H, formed by the hemispherically-ended cylindrical fire-pot G', provided with a flange, *b'*, at its upper end, by means of which it is securely bolted to the plate I, secured to the top of the shell C and forming the bottom of the heating-chamber. The grate G

has its bars farther apart than those in the grate E' below it, so as to allow the passage of ashes as well as clinkers, and is provided with a shaking and dumping handle operating in the ordinary manner.

The plate I, attached to the top of the plate C, forms the bottom of the cylindrical heating-chamber J, which is inclosed by the cylindrical shell K and cover K'. Extending downward through the heating-chamber into the combustion-chamber H is the cone-shaped magazine L, and surrounding this is the spirally-coiled division-plate *c*, one end of said plate being attached to the magazine and the other to the shell K. This forms the heating-chamber into the equivalent of a long coiled pipe, through which the air to be heated travels in its passage from the inlet-pipe B', which enters the chamber at the inner end of the coil to the exit-pipe B, which conducts it from the outer coil to the distributing-tubes A. By this construction the air to be heated is kept for a comparatively long period in contact with the heated metal of the chamber, thus becoming thoroughly warmed without danger of overheating or burning, as but a small portion of the metallic surfaces of the heating-chamber come in direct contact with the combustion-chamber.

A pipe, B', connects with the upper part of the combustion-chamber, passes out through the top of the car, and serves to carry away the smoke and waste gases produced by the combustion of the fuel. It will be seen that the hoods upon the upper ends of the pipes B' and B'' are turned in opposite directions, the first-named having its opening turned toward the front end of the car, so that the forward movement of said car shall tend to force the air through the heating apparatus, while the hood on the pipe B'', being turned toward the rear of the car, a partial vacuum is formed at its mouth, which makes a strong draft of air through the fire, allowing the combustion of the fuel to be perfectly controlled by the inlet-valves of the ash-pit door.

The magazine L is provided with a cover, L', hinged at one side to the top of the magazine and provided with a lock, *d*, at the opposite side, by means of which the cover may be firmly secured to the top of the magazine, and all danger of having its contents thrown out and into the car in case of accident avoided.

An opening in the middle of the cover allows the passage of a vertical shaft, O, the lower part of which is provided with a series of radially-projecting arms, *e e*, that occupy a position in the lower and smallest part of the magazine just above its open end, through which the fuel passes to the combustion-chamber. This shaft has its upper journal-bearing in the cover, its lower end being steadied by a bearing in the cross-piece *e'*, which extends across the magazine just above its lower end. A removable crank, *h*, is attached to the upper end of this shaft, by means of which it can be rotated to facilitate the descent of the

fuel to the combustion-chamber when, as sometimes happens in magazines of conical form, it becomes wedged and fails to keep up the proper supply above the grate.

5 In order to prevent the heater from being thrown out into the car in case of accident, I prefer to inclose it in a metallic cage, which may be constructed by inclosing the whole heater in three triangular plates, P, P', and P'',
10 each having a circular opening of sufficient diameter to receive the heater. These plates are firmly secured to the car, the plate P upon the floor and inclosing the base of the heater, the plate P' at about half its height,
15 and the plates P'' at the top. These plates are all perforated near their outer edge to receive a series of strong metallic bars, *i i*, which form a cage inclosing the heater upon its open side, the other two sides being in-
20 closed by the end and side of the car, thus preventing the heater or its contents from being thrown out of position, as well as protecting the clothes of passengers from contact with its heated surface.

25 I am aware that car-heaters have been constructed with a box or flue running along each side beneath the seats, to convey heated or cold air to different parts of the car; but these conveyers formed no part of the car-frame,
30 being entirely independent thereof, and might be removed without in any way diminishing its strength. In my invention the tubes for conveying the air are an essential part of the

car-frame, and could not be removed without rendering the car useless.

Having thus described my invention, I claim as new and desire to secure by Letters Patent the following:

1. As an improvement in car-heating apparatus, the tubular side sills, A, connected by cross-tube A' and provided with suitable openings and registers to control the admission of heat to the car, said tubes A serving as conveyers of heat and as sills to the car, substantially as shown and described.

2. As an improvement in car-heating apparatus, the cylindrical heater-shell C and fire-pot G', in combination with the partition D' and dish-shaped diaphragm E, provided with a central grated opening for the passage of air and ashes, said parts inclosing the air-space and ash-pit beneath the combustion-chamber, as set forth.

3. In a car-heater, the cylindrical heater-shell C and fire-pot G', in combination with the fuel-magazine L, its locking-cover L', and the spiral heating-chamber surrounding the upper part of said magazine and supported by the shell and its covering-plate, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN W. POST.

Witnesses:

M. T. E. CHANDLER,
M. A. BALLINGER.